

MCA (Revised)

Term-End Examination

June, 2011

10259

MCS-012 : COMPUTER ORGANISATION &
ASSEMBLY LANGUAGE PROGRAMMING

Time : 3 hours

Maximum Marks : 100

(Weightage 75%)

Note : Question no. 1 is compulsory and carries 40 marks.
Attempt any three questions from the rest.

1. (a) Add the following numbers using signed 2's complement representation for 8 bit numbers. Indicate Over flow/Under flow if any :
(i) +82 and -63 (ii) -85 and -40 5
- (b) Design and draw a 8×1 multiplexer using AND and OR gates and explain its working. 7
- (c) Explain the following 8086 microprocessor instruction with the help of an example each. 5
 - (i) DAA
 - (ii) PUSH
 - (iii) LDS
 - (iv) STD
 - (v) XCHG

- (d) Explain the DMA. How it has advantage over Interrupt driven and programmed I/O ? 8
- (e) Write a program in 8086 assembly language that prints the alphabets from A to Z. 7
- (f) Design and draw a Bidirectional shift register with parallel load. 8
2. (a) Write a program in assembly language for 8086 microprocessor to search an element from a list of 5 number using Binary search method. Explain its logic. 10
- (b) Explain the concept of virtual memory. 5
- (c) What are the functions of I/O Interface ? 5
3. (a) Simplify the following function in SOP and POS forms by means of K-map. Also draw the logic diagram. 10
- $F(A, B, C, D) = \sum(0, 2, 5, 7, 8, 10, 11, 12, 14)$
- (b) What is a Device driver ? Differentiate between Device Controllers and Device drivers. 5

- (c) A set associative cache consists of a total of 64 blocks divided into sets with 4 blocks/set. The main memory contains 4k blocks, each block consisting of 128 words. 5
- (i) How many bits are there in main memory address.
- (ii) How many bits are there in each Tag, Set and word fields.
4. (a) Give simplified boolean expressions using three inputs x, y, z and three outputs A, B, C. When binary input is 0, 1, 2 or 3 the binary output is one greater than the input. When the input is 4, 5, 6, or 7 the binary output is one less than the input. 8
- (b) Discuss the difference between SIMM and DIMM. 5
- (c) Discuss the fetch and decode phase of Instruction cycle. 7
5. (a) Write an assembly language program for 8086 microprocessor to convert BCD number into its binary equivalent. 8
- (b) Explain the following : **3x4=12**
- (i) Instruction pipelining.
- (ii) Direct Mapping.
- (iii) QIC Tapes.